

## **4.7 WATER RESOURCES**

The environmental impacts to water resources are discussed below in relation to the alternatives described in Chapter 2.

### **4.7.1 Alternative 1**

Under this alternative the entire McGregor Range would be renewed, and the current boundaries of the range would remain the same. As described in Section 2.1.1, military activities could vary from present conditions to an expanded level of capabilities and intensified use. A greater number of military units and personnel may spend time at McGregor Range, which will require increased support staff and facilities. Construction of roads or new facilities could damage or cause to be relocated surface-water features such as earthen impoundments or pipelines, but this would not impact the resource itself.

No new wells or additional withdrawals from existing wells are planned on McGregor Range, except at Davis Dome, where an on-going investigation of geothermal resources is underway (see Section 3.4.1). There, geothermal water has the potential to produce electric power for a desalination plant to provide drinking water from the saline aquifer. This source would be used to augment or replace water currently pumped by Fort Bliss from the Hueco Bolson aquifer near the Main Cantonment Area. That action would result in a favorable impact to the groundwater resource in both areas by enabling saline groundwater to be used on McGregor Range and by reducing pumpage from the heavily over pumped east El Paso well fields. No negative impact to the groundwater resource is anticipated on McGregor Range.

### **4.7.2 Alternative 2**

Impacts to water resources would be similar to those of Alternative 1. Under this alternative most current mission activities as well as most of the future increases in activities and construction as described in Section 2.2.1 would not be affected.

### **4.7.3 Alternative 3**

Impacts to groundwater resources would be similar to those of Alternatives 1 and 2. Under this alternative, current mission activities that use the Sacramento Mountains and Otero Mesa would be constrained or reduced, and some of the future increases in activities and construction as described in Section 2.3.1 would not be supportable. This would remove the possibility of any disruption from military activities to surface-water features in that area.

### **4.7.4 Alternative 4**

Impacts to water resources would be similar to those of Alternative 3. Under this alternative, current mission activities that use the area north of New Mexico Highway 506 and Otero Mesa would be constrained or reduced. Many future increases in activities and construction as described in Section 2.4.1 would not be supportable under this alternative.

### **4.7.5 Alternative 5 – No Action**

Under this alternative, Army activities on McGregor Range would be terminated with the exception of McGregor Range Camp, the McGregor ASP, and Meyer Range. Military activities would be curtailed drastically. However, water resources on McGregor Range would not be substantially affected due to the retention of these facilities. The return of most of the Tularosa Basin area of McGregor Range to the public domain opens that land for livestock grazing, which will require additional water. Although

military use would be greatly reduced, nonmilitary use would increase. Therefore, no impact to water resources would occur. Groundwater in the area is saline, although pockets of water suitable for livestock may occur locally. Otherwise, water will have to be hauled or piped into the potential grazing areas.

#### **4.7.6 Alternative 6**

Impacts under this alternative regarding congressional designation of the Culp Canyon WSA as wilderness and establishment of an NCA would be similar to, or less than, those of Alternative 1. Since the NCA is assumed to have management similar to the current RMPA, no impacts to water resources are anticipated. However, because the precise nature and extent of the congressional action cannot be determined at this time, detailed water resource analysis for this alternative is deferred until the proposal is specified for this type of nonmilitary withdrawal by the DOI.

#### **4.7.7 Cumulative Impacts**

The City of El Paso currently obtains 44 percent of its water from the Hueco Bolson. Withdrawals by El Paso from the Hueco Bolson aquifer in 1996 were 56,702 af, more than 10 times the amount pumped by Fort Bliss (U.S. Army, 1998a). As much as 100,000 af of water may have been pumped by neighboring Ciudad Juarez, Mexico. The rate of pumping from the Hueco Bolson exceeds the rate of recharge, which means that the aquifer is in overdraft condition and is experiencing accelerated rates of water-level decline. The lowering of water levels in the bolson deposits has permitted the infiltration of salt water into the fresh-water zones in those areas. Downward leakage of brackish water from shallow zones and possible upconing of underlying brackish water from below due to pumpage has increased dissolved solids concentrations in fresh-water zones of the aquifer. Under a current-trends scenario with no increased surface-water supply, two independent studies concluded that the Hueco Bolson would be exhausted of recoverable fresh water by 2013 or 2025, which would result in a water-supply shortage to the area (El Paso, Juarez, Fort Bliss). However, municipal water will continue to be available to customers, including Fort Bliss and McGregor Range, but its short supply may increase costs (U.S. Army, 1998a). The City of El Paso and the El Paso Water Improvement District #1 prepared a long-range *Water Resource Management Plan* to prepare for the water-supply shortage. The plan includes implementation of conservation efforts, and development of alternative water supplies such as: increased reuse of treated wastewater, acquisition of additional Rio Grande Project water, and a desalination plant to use the large amount of brackish groundwater in the Hueco Bolson (U.S. Army, 1998a).

#### **4.7.8 Mitigation**

Although water resources on McGregor Range are not expected to be noticeably affected by activities under any of the alternatives, an increased cost of municipal water to supply McGregor Range would constitute an adverse economic effect. High water costs can be mitigated by using less water. Conservation methods, such as retrofitting of low-flow toilets and showerheads at McGregor Range Camp, water-thrifty design of new construction, and replacement of old water mains and laterals, are effective.

Development of alternate water sources for McGregor Range could become feasible in the future. A potentially favorable area is west of the Sacramento Mountains, from the mouth of Grapevine Canyon to beyond the northern boundary of McGregor Range, where alluvial fan sediments are saturated with fresh water (Section 3.7.2.3). A USGS investigation estimated 1.4 to 2.1 million af of fresh water in storage in that area. An additional 3.6 to 5.4 million af of slightly saline water may be in storage in the same area. The investigation did not extend southeast of Grapevine Canyon, and it is not known how much further the fresh-water zone extends into McGregor Range. A second potential favorable area is the geothermal

**McGregor Range Land Withdrawal  
Legislative Environmental Impact Statement**

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area at Davis Dome where Fort Bliss engineering personnel have indicated that 7 mgd of drinking water could be produced from the saline aquifer at a significantly lower cost than Fort Bliss now pays for water.

Therefore, saline water in those areas would be potentially available for use in specific areas of McGregor Range under present conditions. In the event of a water-supply shortage, this water would be an alternative to municipal water.

**4.7.9 Irreversible and Irretrievable Commitment of Resources**

No irreversible or irretrievable commitment of water resources would occur.

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